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ABSTRACT

One hundred and sixty male high school students, half of them Mexican-American and half Anglo, were administered the Wechsler Adult Intelligence Scale (WAIS), Wide Range Achievement Test (WRAT), and Bender Gestalt. Half of each ethnic group was classified by the public schools as learning disabled and half were in regular classes. The WAIS Verbal, Performance, and Full Scale IQs, all WAIS subtests, Reading, Spelling, and Arithmetic WRAT scores, and Bender errors were analyzed by 19 two-way analyses of variance, with ethnicity and learning disability as the two main effects. Significant differences between ethnic groups were found, with Mexican-Americans scoring significantly lower on Verbal and Full Scale IQ, all Verbal subtests, and WRAT subtests. Few differences in performance IQ or performance subtests were noted. Findings suggested the need for reconsidering the criteria for learning disability classification, including the use of neuropsychological assessment. (Author/CL)

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Differences Between Anglo- and Mexican-American Students Classified as Learning Disabilities

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Public schools classify students as "learning disabilities" as those whose intelligence is normal (IQ=85 or higher) but whose academic achievement levels are significantly lower (one standard deviation of 15 scaled-score points on a standardized achievement test). As many as 30% of Mexican-American students are classified as learning disabled, more than twice the percentage as that for Anglo-American students. Some high schools in the city in which this study was conducted report more than 50% of their students to be classified as learning disabled. This research is an attempt to determine, by analyses of objective psychometrics, the reason for these differences.

Method: One-hundred-sixty male high school students, 80 Mexican-American and 80 Anglo-American, between the ages of 16 and 22, were administered the Wechsler Adult Intelligence Scale (WAIS), the Wide Range Achievement Test (WRAT), and the Bender Visual Motor Gestalt Test. Half of each ethnic group had been classified by the public schools as learning disabled and the other half were in regular classes and included as controls. The WAIS Verbal IQ, Performance IQ, and Full-Scale IQ, the eleven WAIS subtests, along with the Reading, Spelling, Arithmetic, and Average WRAT scores, and the number of errors on the Bender

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(scored on the Koppitz system) were analyzed via 19 separate 2-way analyses of variance. The two main effects were learning disabled vs. non-learning disabled and ethnicity (Anglo- and Mexican-American). The two main effects, along with second-order interactions, were computed for all 19 variables.

Results: Looking at Table 1, the means and standard deviations for all the subjects are presented for all variables. It is obvious from just a casual glance at these data that there is a great deal of variability between groups, not only between the learning disabled and non-learning disabled but also between the Anglo- and Mexican-American learning disabled and even between Anglo- and Mexican-American non-learning disabled.

Table 2 presents the results of the 19 Analyses of Variance done on the entire group. As may be observed, significant ($p<.001$) main effects for Verbal IQ, Full-Scale IQ, all Verbal subtest scores, and all WRAT scores were found. In addition, two Performance subtest scores, Picture Completion and Picture Arrangement, were also significant ($p<.001$ and .01, respectively), as was the Bender($p<.05$). This was not unanticipated, of course, considering the fact that both learning- and non-learning disabled were compared. When Mexican-American and Anglo students are compared, collapsing over the learning disabled dimension, as seen in the second column labeled "Ethnicity", the results are very nearly the same.

Verbal and Full-Scale IQs, all Verbal subtests, and the Arithmetic and WRAT Average scores revealing significance ($p<.001$). In addition, the same two Performance subtests, Picture Completion and Picture Arrangement, were also significant ($p<.01$ and .05, respectively). The Reading, Spelling, Arithmetic, and WRAT Average scores also were also significant ($p<.01, .05, .001, .001$, respectively).

Looking now at the differences between the learning disabled and non-learning disabled, collapsing this time over the ethnicity dimension, we again see very similar results. In this case, again, Verbal IQ, Full-Scale IQ, all Verbal subtests, and all WRAT scores were significantly different for the two groups ($p<.001$). In addition, the same two Performance subtests, Picture Completion and Picture Arrangement, were also significant ($p<.01$ and .05, respectively). In this case, the Bender results were also significant ($p<.05$). While again these are not unanticipated findings, it is of interest to note that the differences are primarily in the verbal areas of intelligence.

Finally, looking at the last column of Table 2, at the second-order interaction between Ethnicity and Learning Disability, we see the same pattern but without as many significant differences. Verbal and Full-Scale IQ approach significance ($p=.051$ and .059, respectively). The Arithmetic, Block Design, and Object Assembly subtests of the WAIS are

significant ($p<.05$) and the Spelling, Arithmetic, and WRAT Average are also significant ($p<.05$, .001, and .01, respectively).

In order to look at these differences in more detail, the means and standard deviations for just the learning disabled students, comparing the Anglo- and Mexican-Americans, are presented in Table 3. When these data were subjected to a series of 19 one-way analyses of variance with Ethnicity as the relevant variable, the results show the previously detailed patterns of scores. Verbal and Full-Scale IQs, and 5 of 6 Verbal subtests were all significantly different ($p<.01$). The Arithmetic subtest of the WAIS and the WRAT-Reading were significant at the .05 level. The Performance IQ nor any of the Performance subtests even approached significance nor did either WRAT Spelling or Arithmetic. These results thus clearly reveal that the differences between the two ethnic groups are the result of purely verbal elements. Although the Full-Scale IQ was also significant, this is almost entirely due to the effects of the Verbal IQ differences.

Finally, in order to demonstrate the effects of ethnicity on performance even in the non-learning disabled, the Anglo- and Mexican-American non-learning disabled students were compared. The means and standard deviations for those two groups can be seen in Table 4. Differences between these two groups were even

more dramatic than between the learning disabled. Again Verbal and Full-Scale IQs, 3 of 6 Verbal IQs, and Reading, Arithmetic, and WRAT-Average were all significant at the .01 level. In addition, the other 3 Verbal subtests, WRAT Spelling, and even the Performance IQ and the same two Performance subtests, Picture Completion and Picture Arrangement, were significant(p,.05).

Discussion: These results clearly demonstrate large as well as significant differences between Mexican-American and Anglos on objective measures of academic and verbal intellectual ability. The fact that few such differences are seen in the performance areas suggests that the differences are primarily language-based which, in turn, would lead one to suspect that the effects of bilinguality are at least partially, if not totally, the basis for the Mexican-American's deficiencies and which lead to the large number of this group being classified as learning disabilities. It is the author's belief that the many of the Mexican-American students classified by the public schools as learning disabled are, in fact, simply culturally deprived and/or linguistically deficient in English as a result of bilinguality. This is supported by the author's observation that, when neuro-psychological evaluations are performed in addition to the WAIS, WRAT, and Bender, far fewer Mexican-Americans than Anglos show evidence of any significant organic neurological involvement. This, in turn, suggests that the differences in the numbers (as

well as percentages) of Mexican and Anglo students classified as learning disabilites is the result of factors other than organic learning problems. Finally, it is the author's contention that to label a student "learning disabled" when he/she may be only deficient in English due to bilinguality serves neither the student nor the educational system well.

In view of these results and the conclusions drawn above, the author would argue that before any student, regardless of ethnicity, is classified as a learning disability, other evidence, such as neuropsychological test results, be obtained. If the student does not exhibit such neuropsychological deficits, some attempts to define (with a view to remediation) whether the student's problem is bilinguality, poor motivation, or some other difficulty. Again, to simply label the Mexican-American student as a learning disability, warehouse him or her in Resource Room until the student becomes disenchanted enough to drop out of school, does everyone a disservice.

Table 1

Means and Standard Deviations for Mexican-American and Anglo Learning Disabled and Non-Learning Disabled Students on the Wechsler Intelligence Scale, Wide Range Achievement Test, and Bender

	M-A/LD		Ang/LD		M-A/Non-LD		Ang/Non-LD	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Information	6.3	1.7	7.6	1.9	9.1	2.5	11.5	2.7
Comprehension	8.3	1.9	10.4	2.2	10.5	2.7	13.6	3.0
Arithmetic	6.7	1.3	7.1	1.5	9.1	2.0	10.5	2.2
Similarities	9.8	1.6	10.9	1.5	11.3	1.9	12.6	1.8
Digit Span	8.1	1.9	9.4	2.4	10.7	2.1	11.8	1.9
Vocabulary	6.9	1.7	8.6	1.7	9.6	2.1	12.0	2.5
Digit Symbol	9.2	1.5	9.1	1.8	9.5	2.2	9.5	1.9
Picture Completion	10.5	1.5	11.1	2.1	11.0	1.8	12.5	2.3
Block Design	12.4	2.0	11.5	2.5	11.8	2.5	12.3	2.7
Picture Arrangement	10.6	1.3	11.0	1.8	10.9	1.7	12.0	1.6
Object Assembly	12.7	2.0	11.7	1.8	11.7	2.1	12.2	2.2
Verbal I.Q.	89.6	5.9	97.3	7.9	102.1	9.8	113.0	10.8
Performance I.Q.	108.0	7.8	106.5	10.0	106.9	10.4	111.6	10.8
Full Scale I.Q.	96.9	4.5	101.2	7.4	104.5	9.0	113.1	9.4
Reading	74.7	10.6	78.3	11.4	105.9	10.4	113.8	12.7
Spelling	73.0	6.1	73.0	5.5	98.7	10.1	103.7	10.8
Arithmetic	78.2	7.1	78.4	6.2	91.2	8.8	100.8	12.3
WRAT-Average	75.1	6.3	76.4	6.2	98.5	7.4	106.0	8.9
Bender Gestalt	1.2	1.5	1.3	1.5	1.0	1.1	1.0	1.0

Table 2

Summary of Analyses of Variance on Wechsler Scales, Wide Range Achievement Test, and Bender for 160 Anglo and Mexican-American Students Classified as Learning Disabled and Non-Learning Disabled

	Main Effects p value	Ethnicity p value	L/D p value	Eth X L/D p value
Information	.000	.000	.000	.077
Comprehension	.000	.000	.000	.165
Arithmetic	.000	.001	.000	.043
Similarities	.000	.000	.000	.473
Digit Span	.000	.000	.000	.882
Vocabulary	.000	.000	.000	.159
Digit Symbol	.380	.735	.178	1.000
Picture Completion	.000	.001	.003	.140
Block Design	.898	.700	.797	.056
Picture Arrangement	.001	.003	.013	.218
Object Assembly	.500	.481	.349	.013
Verbal I.Q.	.000	.000	.000	.141
Performance I.Q.	.254	.294	.202	.051
Full Scale I.Q.	.000	.000	.000	.059
Reading	.000	.002	.000	.221
Spelling	.000	.036	.000	.034
Arithmetic	.000	.000	.000	.000
WRAT-Average	.000	.000	.000	.005
Bender-Gestalt	.033	.302	.016	.545

Table 3

Means and Standard Deviations for Mexican-American and Anglo American Learning Disabled Students on the Wechsler Intelligence Scale, Wide Range Achievemnt Test, and the Bender Gestalt

	M-A L.D.		Ang. L.D.	
	Mean	S.D.	Mean	S.D.
Information	6.3	1.7	7.6	1.9
Comprehension	8.3	1.9	10.4.	2.2
Arithmetic	6.7	1.3	7.1	1.5
Similarities	9.8	1.6	10.9	1.5
Digit Span	8.1	1.9	9.4	2.4
Vocabulary	6.9	1.7	8.6	1.7
Digit Symbol	9.2	1.5	9.1	1.8
Picture Completion	10.5	1.5	11.1	2.1
Block Design	12.4	2.0	11.5	2.5
Picture Arrangement	10.6	1.3	11.0	1.8
Object Assembly	12.7	2.0	11.7	1.8
Verbal I.Q.	89.6	5.9	97.3	7.9
Performance I.Q.	108.0	7.8	106.5	10.0
Full Scale I.Q.	96.9	4.5	101.2	7.4
WRAT-Reading	74.7	10.6	78.3	11.4
WRAT-Spelling	73.0	6.1	73.0	5.5
WRAT-Arithmetic	78.2	7.1	78.4	6.2
WRAT-Average	75.1	6.3	76.4	6.2
Bender Gestalt	1.2	1.5	1.3	1.5

Table 4

Means and Standard Deviations for Mexican-American and Anglo American Non-Learning Disabled Students on the Wechsler Intelligence Scale, Wide Range Achievement Test, and Bender Gestalt

	M-A Non-LD		Ang. Non-LD		
	Mean	S.D.	Mean	S.D.	
Information	9.1	2.5	11.5	2.7	**
Comprehension	10.5	2.7	13.6	3.0	**
Arithmetic	9.1	2.0	10.5	2.2	*
Similarities	11.3	1.9	12.6	1.8	*
Digit Span	10.7	2.1	11.8	1.9	*
Vocabulary	9.6	2.1	12.0	2.5	**
Digit Symbol	9.5	2.2	9.5	1.9	
Picture Completion	11.0	1.8	12.5	2.3	*
Block Design	11.8	2.5	12.3	2.7	
Picture Arrang.	10.9	1.7	12.0	1.6	*
Object Assembly	11.7	2.1	12.2	2.2	
Verbal I.Q.	102.1	9.8	113.0	10.8	**
Performance I.Q.	106.9	10.4	111.6	10.8	*
Full Scale I.Q.	104.5	9.0	113.1	9.4	**
Reading	105.9	10.4	113.8	12.7	**
Spelling	98.7	10.1	103.7	10.8	*
Arithmetic	91.2	8.8	100.8	12.3	**
WRAT-Average	98.5	7.4	106.0	8.9	**
Bender Gestalt	1.0	1.1	1.0	1.0	

*$p<.05$ **$p<.01$

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Abstract

Public schools classify "learning disabilities" as those students whose intelligence is normal (IQ=85 or higher) but whose academic achievement levels are significantly (one standard deviation of 15 scaled-score points) lower. As many as 30% of Mexican-American students are classified as learning disabled, more than twice that for Anglos. This research is an attempt to determine by analyses of objective psychometrics the reasons for these differences.

Method: One-hundred-sixty male subjects, 80 Mexican-American and 80 Anglo, between the ages of 16 and 22, were administered the Wechsler Adult Intelligence Scale (WAIS), Wide Range Achievement Test (WRAT), and Bender Gestalt. Half of each ethnic group were classified by the public schools as learning disabled and half were in regular classes. The WAIS Verbal, Performance, and Full-Scale IQs, all WAIS subtests, Reading, Spelling, and Arithmetic WRAT scores, and Bender errors were analyzed by 19 two-way analyses of variance, with ethnicity and learning disability as the two main effects.

Results and Conclusions: Significant ($p<.001$) differences between Anglo and Mexican-Americans were found, with Mexican-Americans scoring significantly lower on Verbal and Full-Scale IQ, all Verbal subtests, and WRAT subtests. Few differences in Performance IQ or Performance subtests were noted. These results are discussed in terms of bilinguality and socio-cultural factors resulting in abnormally high numbers of Mexican-Americans classified as learning disabled. Reconsideration of learning disability classification criteria, including the use of neuropsychological assessment, are suggested.

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